REMARKS

Claims 1-34 are pending in the application. By way of review, the embodiment of the present invention includes an optical signal shaping device, for example, an optical filter having a profile such that the transmission of light through the device is modulated as an increasing or decreasing function of frequency over a selected bandwidth.

Claim Rejections under 35 U.S.C. §102

2. Claims 1, 2, 9-11, 28, 31, and 34 were rejected in the office action as being anticipated by Nakajima, U.S. Patent No. 6,054,938. The embodiments of the present invention includes a frequency dependent disperser that disperses an input optical signal to form a dispersed signal having a plurality of frequencies. Nakajima does not teach or suggest dispersion, especially not frequency dependent dispersion. Nakajima teaches splitting or branching power from 4P to P as illustrated in Equations 2-5 (Column 4, lines 15-26). There is no frequency difference in the four branches taught by Nakajima.

Further, the embodiments of the present invention include a frequency selective modulator that modulates the plurality of frequencies. Nakajima does not suggest or teach frequency dependent modulation. Instead Nakajima suggests angle dependent modulation (Column 4, lines 32-65).

Independent claims 1, 28, 31, and 34 are allowable in that Nakajima fails to teach or suggest frequency dependent dispersion. Claims 2 and 9-11 are dependent on claim 1 and allowable, at least, for the reasons cited above.

3. Claims 1, 12, 27, 28, 31, and 34 were rejected in the Office Action as being anticipated by Nelson U.S. Patent No. 3,766,392.

In the Office Action, reference numeral 21 is cited for disclosing "a frequency dependent disperser that disperses an input optical signal to form a dispersed signal having a plurality of frequencies." The Applicant respectfully disagrees with the interpretation of reference numeral 21. Column 2, lines 50-53 states that "the optical carrier energy generated by the laser 15 is directed through the modulator 13 by a suitable optical system, such as mirrors, light pipes, or a prism as indicated at 21." There is no

suggestion and/or teaching of the mirrors, light pipes or prism being a frequency dependent disperser that disperses an input optical signal to form a dispersed signal having a plurality of frequencies. In fact, in the embodiment disclosed within the '392 patent, it states that the "laser 15 is assumed to be operating in a so1pulsed so-called it should be understood that the transient phenomenon to be studied will typically take place entirely within a single laser pulse." Col. 2, lines 42 -45. Mirrors and light pipes are not dispersive optical elements, let alone frequency dispersers. Nelson's invention is enabled without dispersion. Likewise, the reference numeral 23 refers to a similar device to that of 21, that being a suitable optical system.

Further, Nelson does not suggest or teach a frequency selective modulator. Nelson suggests the use of a modulator in the form of a curve cell which is not a frequency selective modulator. In addition, there is no discussion of a frequency dependent combiner that combines frequencies in a dispersed signal to form an intensity modulated output signal.

Independent claims 1, 27, 28, 31, and 34 are allowable in that Nelson fails to disclose a frequency dependent disperser that disperses an input optical signal to form a disperse signal having a plurality of frequencies. Therefore, claims 1, 27, 28, 31, and 34 are allowable.

Claim 12 is dependent on claim 1, and is allowable, at least, for the reason cited above.

4. Claims 16 and 20 were rejected as being anticipated by Riza, U.S. Patent No. 5,329,118. While the Office Action cites figure 1 for reference numeral 124, 140, and 192, the Applicant believes that the examiner was referring to FIG. 2A when citing the reference numerals. Referring to column 4, lines 8-11, it 15 stated that "Laser 122 is optically coupled to a collimating lens 124 such that collimated linearly polarized coherent light beams pass from light source 120 into optical time delay unit (OTDU) 130_1." The definition of a collimating lens is a lens on a collimator used to focus light from a source near one of its focal points into beams.

Thus, Riza teaches the use of a collimating lens which is not a frequency disperser element. Further, Riza teaches the use of a focusing lens as a combiner. However, a focusing lens is not a frequency dependent combiner as taught by the present invention.

Independent claim 16 is allowable in that Riza does not teach a frequency disperser. Claim 20 is dependent on claim 16, and is allowable, at least, for the reason cited above.

Claim Rejections under 35 U.S.C. §103

6. Claims 2 - 5 and 7 were rejected as being obvious in view of Nakajima. It is acknowledged in the office action that Nakajima does not disclose that the light is transmitted in a monotonically or linear function. Nakajima does not teach frequency dependence with respect to the modulation function and is limited to a finite number of branches/splits. In contrast, the present invention is able to infinitely split the signal and modulate on an infinite number of branches. Claims 2-5 and 7 are thus allowable.

7. Claims 6, 13, and 14 were rejected in the office action as being unpatentable over Nakajima in view of Jalali (U.S. 5,793,907). Nakajima does not teach frequency dependence with respect to the modulation function and is limited to a finite number of branches/splits. Jalali uses AWG only for time delay, encoding or sensor application. The cited references do not teach or suggest frequency dependent delay generation, dispersion or frequency selective modulation.

8. Claim 8 was rejected as being unpatentable over Nakajima in view of Harumoto. As discussed herein, the cited references do not teach or suggest frequency dependent dispersion, frequency selective modulation and/or combination. Further, there is no motivation to combine the teachings of the cited references.

9. Claims 15, 17-19, 32, and 33 were rejected as being unpatentable over Riza in view of Nakajima. It is acknowledged in the office action that Riza does not disclose that the light is transmitted in a linear function. As discussed herein, the cited references do not teach or suggest frequency dependent dispersion, frequency selective modulation

and/or combination. Further, there is no motivation to combine the teachings of the cited references.

10. Claim 22 was rejected in the office action as being unpatentable over Riza in view of Jalali (U.S. Patent No. 5,793,907). As discussed herein, the cited references do not teach or suggest frequency dependent dispersion, frequency selective modulation and/or combination. Further, there is no motivation to combine the teachings of the cited references.

11. Claims 21 and 23-25 were rejected as being unpatentable over Riza in view of Dragon (U.S. Patent No. 6,263,127). As discussed herein, the cited references do not teach or suggest frequency dependent dispersion, frequency selective modulation and/or combination. Further, there is no motivation to combine the teachings of the cited references.

12. Claims 20 and 26 were rejected in the office action as being unpatentable over Riza in view of Nakajima. As discussed herein, the cited references do not teach or suggest frequency dependent dispersion, frequency selective modulation and/or combination. Further, there is no motivation to combine the teachings of the cited references.

13. Claims 29 and 30 were rejected in the office action as being unpatentable over Nelson (U.S. Patent No. 3,766,392) in view of Nakajima. It is acknowledged in the office action that Nelson does not disclose that the light is in a linear function. As discussed herein, the cited references do not teach or suggest frequency dependent dispersion, frequency selective modulation and/or combination. Further, there is no motivation to combine the teachings of the cited references.

Second Supplemental Information Disclosure Statement

A Second Supplemental Information Disclosure Statement (IDS) is being filed concurrently herewith. Entry of the IDS is respectfully requested.

In addition, the Office Action of June 10, 2002 indicates that a Notice of References Cited (PTO-892) is attached. However, the Applicant could not locate a copy of PTO-892 with the action received.

The Applicant filed information disclosure statements on July 5, 2000 and March 9, 2001. However, the foreign patent documents and other documents were crossed out and not initialed on the PTO-1449 forms mailed to the U.S. PTO on July 5, 2000.

The Applicant respectively requests a copy of the PTO-892 form mailed with the Office Action of June 10, 2002, and an explanation for the deletion of particular references on the PTO-1449 forms. In the alternative, the Applicant requests full consideration be given to all references.

CONCLUSION

In view of the amendments and remarks, it is believed that all claims are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone call would expedite the prosecution of this case, the Examiner is invited to call the undersigned at (508) 879-5700.

Respectfully submitted,

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